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Models of the hydrogen atom lab answers

You seem like a robot, so we're asking you to enable cookies and JavaScript in your browser. This might be happening because you're super-fast at browsing, or you have some third-party plugins blocking JavaScript. If you need more info, check out our support article. **Models of the Hydrogen Atom** Let's dive into learning goals for this topic: * Visualize different models of the hydrogen atom. * Explain similarities and differences between each model. * Understand what predictions each model makes. * Learn why people believed in each historical model and why they were inadequate. * Understand the difference between physical orbits and energy level diagrams. * Get a sense of how scientists build models. * Practice building models yourself. **Multiple Choice Questions** Open the simulation, and let's identify observations and inferences for each aspect: * Picture of atom: [observation/inference] * Movement of photons across the screen: [observation/inference] * Energy level diagram: [observation/inference] * Pattern on spectrometer: [observation/inference] **Long Answer Questions** In this section, we'll ask you to discuss observations and inferences that led to new models of the atom. You might find the simulations helpful for answering these questions. Example: Billiard Ball to Plum Pudding – Before Thomson, it was thought that atoms were indivisible chunks of matter with no internal structure. Based on the observation that x-rays could ionize monatomic gases, he made the inference that atoms could be separated into a negative part and a positive part. He also observed that cathode rays could be converted to current and deflected by a magnetic field, leading him to infer that cathode rays were made of negative charges. This led him to develop a model of the atom in which little electrons were stuck in a big positive goo. Quantum Mechanics Hydrogen Atom Bohr Model DeBroglie Wavelength Schrodinger Model Scientists discovered the structure of atoms without directly observing them by testing different models using light. They compared predictions from each model to experimental results, refining their understanding of atomic structure. Learning Objectives: * Visualize various hydrogen atom models * Explain the predictions and reasons behind each model * Highlight the limitations of historical models * Connect the physical orbit picture with energy level diagrams for electrons Take a step into model building!